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would have been risked by him intentionally.

The last plan proposed by the patentee for supplying pens with ink, is liable to obvious objections; for it would both greatly endanger the blotting and defacing account-books and other papers of importance, which might lie on the desks, in case of the breaking any of the metal pipes, or mismanageing the cocks; and would add so much resistance to the motion of the pen, by the weight of the flexible tube, as in all probability would tire the hand with a much less portion of writing than would be the case with pens not thus encumbered.

Making the fountain pen act by compression, seems a valuable improvement, and promises to come into such general use as, added to the sale of the machines for making pens, to recompense the patentee for his trouble and expense; means will probably be soon devised to regulate the expansion of the air from an encrease of temperature, which when much air is in the tube, would cause the ink to flow out, and then the only remaining inconvenience to which this pen is liable will be removed.

Patent of Mr. David Meade Randolph, of Golden-square, Middlesex, for a method of manufacturing boots, shoes, and other articles, with a substitute for thread or yarn.

Dated Feb. 1809.

The substitute for yarn in making boots and shoes, consist of small brads, sprigs, or tacks, made of copper, iron or other proper metals, applied in forming the soles and heels alone, principally by the use of a last, constructed with an iron sole about the thickness of common sole leather. This iron sole has three holes made through it, about an inch in diameter, one near the toe, another about half-way between the toe and the heel, and a third in the heel; which holes are filled up level with wooden plugs, and are made for the purpose of fastening the boot or shoe to the last, in the usual manner while making. When the upper-leather and inner-sole are placed on a last of this description, the outer-sole is nailed to the inner-sole by brads of such a length, as will allow them to perforate the inner sole, with which the metal sole of the last being in close contact, it turns and clinches them so as to present a smooth surface inside; and the brads thus connect the two soles so as to serve instead of stitching or sewing them. This new method is not limited to the edge or margin of the sole, but can be also applied to any intermediate space, where strength and durability may be deemed requisite.

Another application of the same principle, with some addition, is mentioned by the patentee at the end of the specification, in the following words. I also apply as a substitute for yarn, &c. in the fabrication of braces, traces, or other articles to which the same can be usefully applied, and in place of stitching, wires made of iron, brass, or copper, or other fit metal. These wires I use lengthways, by stretching them the whole length of the trace or brace; and they are fastened at each end round small metal cylinders, inclosed between plates of leather, connected, by means of the substitute mentioned.

Some account of experiments on different kinds of charcoal, for improving the manufacture of gunpowder, and of the slowness of combustion of chesnut wood, extracted from a paper by M. Proust.

Journal de Physique.

Five parts of pulverised and very dry salt-peter were put into a large bronze mortar, along with one part of the charcoal intended to be examined; a few drops of water were then sprinkled on it, and the mixture was triturated with an iron pestle for half an hour. Water was then added, but only a little at a time, so as to keep the mixture sufficiently moist to prevent it from flying about: this labour was continued for six hours, and when the mixture appeared to be as dry as it could be made by the action of the pestle, the powder was withdrawn, wrapped up in a double fold of paper, and placed on a drying stove. When dry it was beaten in the mortar for about half an hour, in order to obtain an impalpable powder, which was then put in a bottle and secured by a cork.

When the several mixtures were prepared, they were exposed a second time to the stove, in order to have them all of the same degree of dryness; from one to two ounces only of each mixture was prepared.

Sventy-two grains of each mixture was put into a brass tube, half a line thick, three lines in diameter, and two inches and a half or more in length, closed at one end, soldered without leaving any lumps inside, and perfectly equal in the caliber. Several tubes of this kind were prepared, differing only in length, and sized from two and a half to three inches in length, encreasing only a line in each size. The tubes were charged with a quill cut sloping, and the mixture was rammed down with a brass rod of the same diameter as the tube, and about five inches long, the upper end of which was formed into a ring; when the 72 grains were rammed in, each tube was cut off so as to leave a line above the charge; it was then fixed in a round of cork half an inch thick, and about two inches in diameter, with its upper edge only two or three lines above the surface of the cork; after this the cork and tube were set to float in a drinking glass filled with water: in order to keep the tube cool, whose heat was however sufficient to make the water hiss that touched it, and to detatch bubbles from it.

A pendulum that vibrated seconds, hung from a quadrant, with divisions like those of Mr. Pierre Leroy, was got ready to note the time of the combustion; and a priming of the best gunpowder, finely pulverised, being put at the top of the mixture in the tube, where a space of a line in depth, was left; it was fired by the point of a match, at the instant when the ball of the pendulum was put in motion.

As there was a remarkable coincidence between the duration of the combustion, and the weight of the residuum left in the tube, its weight was carefully noted, and was always less as the combustion was most rapid, and the force of the mixture was greater also in the same proportion, which illustrates the fact frequently observed by sportsmen, that the longer time gunpowder takes in consuming on a piece of paper, so much is it weaker, and so much more does it foul their guns.

The following table shows the time of the combustion of various species of charcoal, managed as recited, and the weight of the residuum left in the tubes after combustion.

TABLE OF THOSE KINDS OF CHARCOAL THE MIXTURE OF WHICH BURNED IN THE TUBES.

Saltpetre, 60 grains. *Charcoal, 12 grains.*		*Time of burning. Seconds.*	*Weight of Residuum. Grains.*
1	Charcoal of Sugar	70	48
2	of fossil coal, or coak	50	45
3	of Indian corn or maze	55	43
4	of Alcohol, by three parts of sulphuric acid, and heated to redness	36	44
5	of Walnut-tree wood	29	33
6	of Chesnut wood	26	36
7	of the stalks of maize	25	38
8	of the stalks of pimento	25	36
9	of hazel wood	23	30
10	of spindle-tree wood	21	27
11	of bourdeine	20	24
12	of fir, or deal	17	30
13	of the stalks of chick-peas	13	21
14	of vine twigs	12	20
15	of hemp stalks peeled	10	12
16	of the stalks of asphodel lillies	10	12

MIXTURES WHICH WOULD NOT BURN IN THE TUBES.

Charcoal of starch
.... of wheat
.... of rice
.... of nutgalls
.... of guaicum
.... of heath

Charcoal of indigo
.... of wheat gluten
.... of glue
.... of white of egg
.... of human blood
.... of tanned leather.

Among the remarks made by Mr. Proust on these experiments, the following on chesnut timber seem the most deserving of our notice.

The Chesnut tree, whose charcoal requires 26 seconds to be consumed, or rather the wood of it, has received from nature a peculiar quality, which renders it very valuable in those countries where it is plentiful, and which does not seem to be so generally known as it ought to be.

In the Asturias a province as rich, by the fruitfulness of its soil, as it is enchanting, by its picturesque views, which are worthy the pencil of Casas, the chesnut is sometimes used for fuel. If a brand of it is taken from the fire, it is seen not without some surprise, that it is extinguished as rapidly in the open air as if it was plunged into carbonic acid gas; this happens so quickly that a pipe cannot be lighted by it It is probably this difficult combustibility that occasions its being preferred for floors (in the Asturias) which are there, scarcely ever tiled. In all the houses the floors are brought so near the fire place, that one is astonished at the security of the inhabitants; but one soon becomes as indifferent as they are in this respect, when it is observed, that if any burning wood happens to fall on the floor, there is no more danger than if it fell upon tiles. A plank will at the utmost be scorched, but there is *no risk*, as with other kinds of timber, *of the house being set on fire.*

It is also from the nature of chesnut charcoal, that this kind of fuel is preferred in forges. Take the hands from the bellows, and it begins to go out; its consumption is thus husbanded, while the workman is at the anvil.

Mr. Proust also observes, that heath-charcoal, or that of its roots has the same property, and ceases to burn as soon as the bellows ceases to blow.

Proceeding upon the supposition that azote, which is contained in so many kinds of charcoal, might cause that incumbustibility, that characterises some of them; Mr. Proust *treated* several of them with potash, to observe what effect this would have upon their combustibility, in case that principle should not be found in them.

Chesnut-wood charcoal, treated *first* with potash and then with a dilute acid, in order to cleanse it from a quantity of soluble ashes, became more combustible than before; for instead of requiring twenty-six seconds, it took *no more than* sixteen to detonate with *five* parts of saltpetre. No traces of prussic acid could be discovered in the ley.

Charcoal of heath also became improved by this mode of treatment.

Indigo charcoal yielded a considerable quantity of prussiate: the residuum was not observed to have required an increase of combustibility.

Two successive operations upon coak formed from some excellent coal, dug at Villa nueva del Rio, near Seville, caused a diminution of its combustibility. The first ley contained prussiate.

Some fine anthracite, which burned with great difficulty without any flame or odorous vapour, yielded evident traces of prussic acid. It is probable therefore that it derived its origin from fossil coal. This antheracite was found very near the monastery of Harbas, at a little distance from the pass which leads to Soiedo through the beautiful valley of Campomanes.

Cases illustrating the effects of Oil of Turpentine in the expelling the tape worm, by John Coakly Lettsom, M D. and president of the Medical Society.

Phil. Mag. XXXVI; 307.

Dr. Lettsom was consulted in Sep. 1809, by a gentleman 35 years of age on account of an uneasiness in the abdomen, with dyspepsia, which were supposed to originate from tœnia, or tape worm, as small portions of it had occasionally been evacuated downwards.

The doctor prescribed a course of male fern, with occasional catharties, as recommended by madame Nonflet. In this plan the gentleman persevered for the space of three months; in which period he discharged, *at two different times*, about eight yards of the tœnia. In April, 1810, he again applied to the doctor, in consequence of labouring under his former complaints; adding, that he imagined, from the long use of the plant recommended, his pains, and particularly the dyspepsia and general debility, had increased. The doctor then ordered the *oleum terebinthinœ rectificatum*, in a dose of nine drachms by weight, and after it a little honey to remove the heat and unpleasant taste it might occasion. In a week after taking the oil the patient informed the doctor, that in a few hours after taking this dose, *more than four* yards of the tœnia were discharged, at the second motion, and also a quantity of matter, resembling the substance of the skins of the tœnia. The medicine produced little or no pain, and at least much less than the purgative he had taken after the use of the male fern. The subsequent